CLAIMS:

1. A circuit board assembly comprising a laminate substrate having oppositely-disposed first and second surfaces, a surface-mount device attached with at least one solder joint to the first surface of the laminate substrate, and a localized stiffener attached to the second surface of the laminate substrate directly opposite the device, the device and the localized stiffener having lateral dimensions in a plane parallel to the first and second surfaces of the laminate substrate with at least one of the lateral dimensions of the localized stiffener being greater than the lateral dimensions of the device, the laminate substrate, the device, and the localized stiffener having coefficients of thermal expansion and having moduli of elasticity, the coefficients of thermal expansion of the device and the localized stiffener being less than the coefficient of thermal expansion of the laminate substrate, the modulus of elasticity of the localized stiffener being greater than the modulus of elasticity of the laminate substrate, the localized stiffener being attached to the laminate substrate so as to locally stiffen the laminate substrate beneath the device and thereby increase the fatigue life of the at least one solder joint.

2. A circuit board assembly according to claim 1, wherein the localized stiffener is attached to the second surface of the laminate substrate with a bonding material.

3. A circuit board assembly according to claim 1, wherein the localized stiffener is attached to the second surface of the laminate substrate with at least one solder joint.

4. A circuit board assembly according to claim 1, wherein the localized stiffener is attached to the second surface of the laminate substrate with a plurality of solder joints, the solder joints spacing the localized stiffener from the laminate substrate to define a gap, the circuit board assembly further

comprising an underfill material that completely fills the gap between the localized stiffener and the laminate substrate.

5. A circuit board assembly according to claim 4, wherein the localized stiffener is a rejected surface-mount integrated circuit chip that is not electrically functional on the circuit board assembly.

6. A circuit board assembly according to claim 1, wherein the localized stiffener is entirely encapsulated with an adhesive.

7. A circuit board assembly according to claim 1, wherein the localized stiffener is larger than the device.

8. A circuit board assembly according to claim 7, wherein each of the lateral dimensions of the localized stiffener is greater than the lateral dimensions of the device.

9. A circuit board assembly according to claim 1, wherein the localized stiffener has a cross-shape in a plane parallel to the first and second surfaces of the laminate substrate.

10. A circuit board assembly according to claim 9, wherein the cross-shape of the localized stiffener is defined by two pairs of opposing legs that establish the lateral dimensions of the localized stiffener, each pair of the opposing legs being parallel to one of the lateral dimensions of the device, the lateral dimension established by each pair of the opposing legs being greater than the lateral dimension of the device with which the pair of opposing legs is parallel.

11. A circuit board assembly according to claim 9, wherein the cross-shape of the localized stiffener is defined by two pairs of opposing legs that establish the lateral dimensions of the localized stiffener, each pair of the

opposing legs being transverse to the lateral dimensions of the device and projecting beyond the lateral dimensions of the device.

12. A circuit board assembly according to claim 1, wherein the device and the localized stiffener having peripheral boundaries that establish the lateral dimensions of the device and the localized stiffener, the peripheral boundaries of the device being superimposed entirely within the peripheral boundaries of the localized stiffener.

13. A circuit board assembly according to claim 1, wherein the at least one solder joint comprises a plurality of solder joints that attach the device to the laminate substrate, the solder joints spacing the device from the laminate substrate to define a gap, the circuit board assembly further comprising an underfill material that completely fills the gap between the device and the laminate substrate.

14. A circuit board assembly according to claim 1, wherein the laminate substrate has conductive vias between the first and second surfaces that thermally couple the device to the localized stiffener.

15. A circuit board assembly according to claim 1, wherein the localized stiffener has a modulus of elasticity of at least 18 GPa.

16. A circuit board assembly according to claim 1, wherein the localized stiffener is formed of a material chosen from the group consisting of silicon, alumina, silicon nitride, silicon carbide, stainless steel, molybdenum, Fe-Ni alloys, and tungsten.

17. A circuit board assembly according to claim 1, wherein the circuit board assembly is an overmold circuit board assembly.

18. A circuit board assembly comprising a laminate substrate having oppositely-disposed first and second surfaces, a surface-mount integrated circuit device attached with multiple solder joints to the first surface of the laminate substrate, and a non-electrically functional stiffener attached to a limited region of the second surface of the laminate substrate directly opposite the device, each of the device and the stiffener having peripheral boundaries that establish a pair of transverse dimensions in a plane parallel to the first and second surfaces of the laminate substrate, each of the transverse dimensions of the stiffener being greater than a corresponding one of the transverse dimensions of the device, the laminate substrate, the device, and the stiffener having coefficients of thermal expansion and having moduli of elasticity, the coefficients of thermal expansion of the device and the stiffener being less than the coefficient of thermal expansion of the laminate substrate, the modulus of elasticity of the stiffener being greater than the modulus of elasticity of the laminate substrate and at least 18 GPa, the stiffener being attached to the laminate substrate so as to locally increase the biaxial bending stiffness of the laminate substrate between the device and the stiffener and thereby increase the fatigue life of the solder joints.

19. A circuit board assembly according to claim 18, wherein the stiffener is attached to the second surface of the laminate substrate with an adhesive, at least one solder joint, or a combination thereof.

20. A circuit board assembly according to claim 19, wherein the stiffener is a rejected surface-mount integrated circuit chip.